REMARKS

Claims 20, 23-28, 31-35, 37, 39-42, 44-45, 47, 52-54, and 60-82 are pending in this application after this Amendment. Claims 52 and 60 are independent. Claims 1, 3-19, 21-22, 29-30, 36, 38, 43, 46, 48-51, and 55-59 have been canceled without prejudice or disclaimer to the subject matter included therein. In light of the amendments and remarks contained herein, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections.

In the outstanding Official Action, the Examiner rejected claims 48-51 and 56-59 under 35 U.S.C. § 112, second paragraph. The Examiner further rejected claims 1, 3-11, 13-15, 19-26, 29-39, 41-43, and 47-60 under 35 U.S.C. § 103 as being unpatentable over *Perona et al.* (USP 6,044,165) in view of *Taguchi et al.* (USP 5,748,808); rejected claims 12 and 40 under 35 U.S.C. § 103 as being unpatentable over *Perona et al.* in view of *Taguchi et al.*, and further in view of Bennett et al. (USP 5,051,736); and rejected claims 16-18, 27-28, and 44-46 under 35 U.S.C. § 103 as being unpatentable over *Perona et al.* in view of *Taguchi et al.*, and further in view of *Tano et al.* (USP 5,850,058). Applicants respectfully traverse these rejections.

Claim Rejections - 35 U.S.C. § 112

The Examiner has rejected claims 48-51 and 56-59 under 35 U.S.C. § 112, second paragraph, as having insufficient antecedent bases. By this Amendment, Applicants have canceled claims 48-51 and 56-59 without prejudice or disclaimer. As such, it is respectfully submitted that the outstanding rejection be withdrawn.

11

Claim Rejections - 35 U.S.C. § 103 - *Perona et al./Taguchi et al.*

In support of the Examiner's rejection of claim 52, the Examiner seeks to combine the teachings of *Perona et al.* and *Taguchi et al.* Specifically, the Examiner seeks to combine those teachings of *Taguchi et al.* directed to recording a plurality of images with partially overlapping contents and processing means to determine the relative positions of the images with the aid of the partially overlapping contents with the tracking system of *Perona et al.* that tracks movement of a writing implement relative to a writing surface by monitoring the tip of the writing implement. Applicants respectfully submit that the Examiner's combination of the cited references changes the principal operation of *Perona et al.*, and thus the Examiner's purported combination is wholly improper.

**The Proposed Modification Would Change the
Principle Operation of the Prior Art Being Modified**

The disclosure of *Perona et al.* is directed to an apparatus and method for tracking handwriting from visual input. As noted in the Abstract of *Perona et al.*, the system detects movement of a writing implement relative to a writing surface to determine the path of the writing implement. The writing implement tip is determined within the image and used to form a kernel. This determination is made either manually by looking for a predetermined pen tip shape or by looking for a position of maximum motion in the image. The kernel is tracked from frame to frame to define the path of the writing implement. The track is accomplished by correlating the kernel to the image,

DRA/CMV/jdm/jao

either to the whole image, to a portion of the image near the last position of the kernel, or to a portion of the image predicted by a prediction filter.

In solving the problems identified in the background portion of the disclosure, *Perona et al.* identifies an object of the invention to allow monitoring of handwriting on any surface. *Perona et al.* in col. 2, line 55, discloses that the present invention teaches a technique of recognizing writing using any writing implement, e.g., a pen on any writing surface. **The position of the writing implement** is preferably tracked by a camera and associated processing equipment. In a preferred embodiment, *Perona et al.* discloses that the initial position of the pen tip is determined. Once the pen tip is determined, the image neighborhood around the initial position of the pen tip is assembled into a kernel. The kernel is used to determine the position of the pen tip in subsequent frames (col. 2, line 65 - col. 3, line 3).

The device of *Perona et al.* obtains a video image of the movement of the writing implement relative to the writing surface. The image can be the image of a pen or other writing instrument including the hand and/or fingers while it is tracing letters, graphic characters, or any other image formed by the user's hand movement. *Perona et al.* notes that it is important that the system preferably monitors relative movement of the writing implement instead of imaging previously written characters (col. 3, lines 35-46).

Each of the claims in *Perona et al.* incorporates obtaining video images of the writing implement relative to the writing surface where the **position of the writing implement is tracked based upon a portion of the writing implement in the image.**

In contrast, the disclosure of *Taguchi et al.* is directed to an image reproducing method and apparatus capable of storing and reproducing handwriting. The handwriting storage and reproducing method takes small images including a leading edge for writing and stores the small images in a time sequential manner following a movement of a writing device. The method then reads out the small stored images and overlaps a just read out small image to a previously read out small image so as to obtain a partial image when both small images include portions which include partial handwritings coincident to one another (Abstract). When writing device 1 is used, the handwriting, the image on paper 25, is received by the telecentric lens 3 as rays which are parallel to the optical axis. The image is transformed into handwriting image data signals by the CCD area sensor 4 (col. 13, lines 27-30). During the writing, the CCD area sensor sequentially takes images within the field of view at a constant sampling frequency (col. 13, lines 52-54). The entire handwriting is stored by storing the small images of constant size continuously during the writing (col. 14, lines 11-13). *Taguchi et al.* clearly discloses capturing the **handwriting made by the writing device in the images** in order to reproduce the handwriting.

It is well known that there is no motivation to combine references where the purported combination would change the principal operation of the primary reference. In order for a *prima facie* case to exist, the prior art must suggest the desirability of the claimed invention, providing motivation to make the combination proposed by the Examiner. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ 2d1453, 1457-58 (Fed. Cir. 1998). The level of skill in the art cannot be relied upon to provide this suggestion to combine the references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999). See also MPEP §2143.01.

The Examiner seeks to replace the pen and camera of *Perona et al.* with *Taguchi et al.*'s recording means. *Perona et al.* clearly creates a system that tracks handwriting solely **based on the writing implement that is used and not the handwritten information that results on the piece of paper**. The tracking system of *Perona et al.* uses the image information to identify a pen tip and calculates or tracks the position of the pen tip in the video image signal. In a completely different mode of operation, *Taguchi et al.* takes a series of successive images of **handwritten information appearing on a sheet of paper** and reproduces handwritten information by discerning partial handwritings coincident within small images. Clearly, by replacing *Taguchi et al.*'s recording means with *Perona et al.*'s pen and camera, the principal operation of *Perona et al.* would be changed. As such, Applicants maintain that the Examiner's purported combination is

wholly inappropriate and maintain that one skilled in the art would not seek to make the purported combination as asserted by the Examiner.

As the resultant combination of the teachings of the references would change the principal operation of *Perona et al.*, Applicants maintain that there is no motivation to combine the references as purported by the Examiner. As the Examiner has failed to provide proper motivation by failing to provide properly combinable references, Applicants maintain that the Examiner has failed to establish *prima facie* obviousness under 35 U.S.C. § 103. As such, Applicants respectfully request the outstanding rejection be withdrawn.

There is No Reasonable Expectation of Success

It is well established that in order to establish *prima facie* obviousness, there must be a reasonable expectation of success. The prior art can be modified or combined to reject claims a prima facie obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed Cir. 1986). See also MPEP §2143.02.

The Examiner seeks to replace the pen and camera of *Perona et al.* with *Taguchi et al.'s* recording means. *Perona et al.* clearly creates a system that tracks handwriting solely **based on the writing implement that is used and not the handwritten information that results on the piece of paper**. The tracking system of *Perona et al.* uses the image information to identify a pen tip and calculates or tracks the position of the pen tip in the video image signal. In a completely different mode of operation, *Taguchi et al.* takes

a series of successive images of **handwritten information appearing on a sheet of paper** and reproduces handwritten information by discerning partial handwritings coincident within small images.

Applicants respectfully submit that the disclosure of *Perona et al.* teaches inputting the pre-processed image to a processor by tracker 112 which processes the video information received by the pen. The pen up/down classifier 130 provides an indication of whether the pen is touching the writing surface or not and the system recognition unit 140 uses the outputs to recognize the movement of the writing implement. Tracker 112 executes an operation to track the information contained in the input images. The processing of tracker 112 includes initialization, measurement of the pen tip position and filtering (col. 3, line 55 through col. 4, line 3). *Perona et al.* clearly teaches that tracker 112 establishes the path of the writing implement by discerning the position of the **pen tip** in the images.

By replacing the input with that captured by the camera and pen of *Taguchi et al.*, there would be no pen tip in the input images. As such, the system of *Perona et al.* would not be able to discern the path of the writing implement. As such, Applicants maintain that there would be no reasonable expectation of success. Thus, Applicants maintain that the Examiner has failed to establish *prima facie* obviousness under 35 U.S.C. §103.

The Proposed Combination Relies on Impermissible Hindsight

In support of the Examiner's rejection of claim 52, the Examiner asserts that *Perona et al.* teaches providing a surface having a preexisting pattern asserting a sheet of paper inherently has a pattern such as a texture. The Examiner relies on *Taguchi et al.* to teach determining how the device has been moved based at least in part on the relative positions of the preexisting pattern in the partially overlapping images asserting that the neighboring areas in *Taguchi et al.* inherently contain the pattern of the paper such as the texture and any preexisting lines and further asserts *Taguchi et al.* teaches during the matching operation of partially overlapping images, both the newly created written trace and its neighboring pattern are matched to determine the displaced movement. The Examiner concludes that the combination teaches the claim element because the degree of matching also depends on the relative positions the surface pattern in the partially overlapping images. Applicants respectfully disagree with these assertions.

There is no teaching or suggestion in *Taguchi et al.* that is directed to considering any purported "texture" or preexisting lines on the paper. Further there is no indication in *Taguchi et al.* that suggests that the device in *Taguchi et al.* could even discern any preexisting pattern on the surface. The mere fact that a certain thing is possible or probable, or may result from a given set of circumstances is not sufficient to establish the teaching as asserted by the Examiner. *Continental Can Co. USA, Inc. v. Monsanto*, 20 USPQ 1746, 1749, 1750 (Fed. Cir. 1991).

As such, there is no motivation to combine the teachings of the cited references as asserted by the Examiner as neither of the references cited by the Examiner suggest the purported combination. Further, as the system of *Perona et al.* suggests the use of the movement of the writing implement to discern the writing implement's path, one skilled in the art would not have been motivated to modify *Perona et al.* to determine relative shift based on a preexisting pattern on the surface.

The teaching or suggestion to make the asserted combination or modification of the primary reference must be found in the prior art and cannot be gleaned from applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). In other words, the use of hindsight to reconstruct the claimed invention is impermissible. *Uniroyal Inc. v. Rudlan-Wiley Corp.*, 5 USPQ 1434 (Fed. Cir. 1983).

By asserting that it would have been obvious to modify *Perona et al.* to include the purported features of *Taguchi et al.* with no suggestion or motivation in the applied references, or elsewhere to do so, the rejection appears to rely on impermissible hindsight reasoning. As such, for all of the reasons noted above, Applicants maintain that claim 52 is patentable over the references as cited.

Claims 20, 23-28, 53-54, and 73-82 are allowable for the reasons set forth above with regard to claim 52 at least based upon their dependency on claim 52. Further, as claim 60 was rejected using the same references and similar rationale as claim 52,
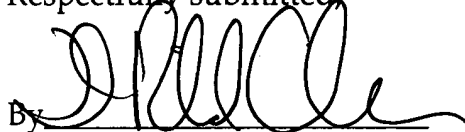
Applicants maintain that claim 60, together with claims dependent thereon, are allowable for the reasons set forth above with regard to claim 52.

Conclusion

If the Examiner has any questions concerning this application, the Examiner is requested to contact Catherine M. Voisinet, Reg. No. 52,327 at the telephone number of (703) 205-8000. Facsimile communications may be sent to facsimile number (703) 205-8050.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

By

D. Richard Anderson
Registration No.: 40,439
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road, Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant

DRA/CMV/jdm/jao